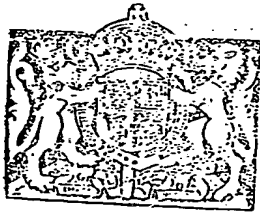


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PATENT SPECIFICATION



Application Date: May 18, 1932. No. 14,150/32.

401,718

Complete Accepted: Nov. 20, 1933.

COMPLETE SPECIFICATION.

Improvements relating to Chairs and like Seats.

We, LEABANK MANUFACTURING COMPANY LIMITED, a British Company, of Charlton Meade Works, Hoddesdon, Herts, and FREDERICK WILLIAM KENT, a British subject, of The Hollies, Ware Road, Hoddesdon, Herts, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to chair and like seats and has for its object to provide an improved form of adjustable back-rest which is particularly applicable to the industrial type of chair used in offices and factories.

In the use of a chair of this type it is very desirable to have a readily accessible means for adjusting the position of the back-rest in relation to the seat both vertically and horizontally to suit the particular requirements of the user of the chair, and the object of the invention is to provide an improved construction of mechanism of the type which will enable both pivots which together provide the necessary adjustments of the back-rest to be released and locked in adjusted position by the operation of a single locking member readily accessible to the user of the chair without rising from the seat.

In the improved apparatus which constitutes the present invention a multiplate clutch is employed for locking the back-rest in any position relative to the seat by means of a single clamping device. Preferably the back-rest is carried by a supporting pillar, which is pivoted near its end to a link the other end of which is pivoted to a member fixed to the seat, and clutch plates are provided on the two pivots, these clutch plates being so interconnected that both pivots can be locked in adjusted position by the operation of the single clamping device.

This locking is accomplished by providing what are, in effect, two multiplate clutches, one on each of the above-mentioned pivots, and the arrangement is such that both clutches can be put into engagement by a single tightening device, and when engaged will prevent any turn-

ing of the component members about either of the pivots.

These clutches are preferably formed by mounting one set of clutch plates, in the base of the back rest pillar, a second set on the fixed member and a third or central set between two links,—each pivoted at one end to the pillar and at the other end to the seat; the ends of the plates of the first and second sets engage with those of the third set. In order to prevent turning of the first and second sets relative to the pillar and the fixed member respectively, each set is traversed by a rivet or the like as well as by a pivot.

The simultaneous engagement of the clutches is ensured by a bolt which passes through the two links and the third set of clutch plates, and is provided with a fly-nut or equivalent hand-operated closing device.

When the nut is tightened, the links are drawn together and clamp the co-operating ends of the clutch plates on the pivots against one another, thus locking the back rest pillar relative to the fixed member in the position to which they have been adjusted.

In the accompanying drawings which illustrate a preferred embodiment of the invention in a diagrammatic manner,

Fig. 1 shows a side elevation of a chair incorporating the improved back rest control device.

Fig. 2 shows a perspective view to an enlarged scale of the back rest adjusting means, with certain parts cut away.

Fig. 3 shows a sectional plan taken through the centres of connecting links, and

Fig. 4 shows a perspective view as in Fig. 3, of a modified form of the back rest control device.

The back rest 18 is carried by a pillar 1 preferably of channel section, which is connected to two links 2, 2 by means of a pivot 5 passing through both of the links 2, 2 near their ends and through the pillar 1 near its base. The other ends of the links 2, 2 are connected by a pivot 7 to a channel member 3, which is carried under the seat 14 of the chair and is

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fixed in relation thereto.

A set of clutch plates 9 is fixed in the bottom of the pillar 1 by means of a rivet 4 and the pivot 5 which pass through the set of clutch plates by means of registering holes in each plate. A second set of clutch plates 11 is arranged within the end of the channel member 3 by means of a rivet 15 and the pivot 7 in the same way as the set 9 is fixed in the pillar, 1.

A third set of clutch plates 10 is carried by the pivots 5, 7 between links 2, 2 the ends of the plates of this set 10 successively lapping with those of set 9 on pivot 5 and with those of the set 11 on the pivot 7. As may be seen from the drawings the clutch plates are of strip form with rounded ends and of such width that they fit conveniently in their respective places. Further, the plates of the set 10 are formed with holes in register approximately at their centre so as to accommodate the bolt 6, which also passes through the links 2, 2 and is provided with a fly-nut 8. Tightening and loosening of the nut 8 simultaneously controls what are, in effect, two multi-plate clutches, one on the pivot 5, and one on the pivot 7.

In order that tightening of the fly-nut 8 shall clamp the clutch plates together sufficiently tightly, the pillar 1 and the channel member 3 are provided with extensions 13, 13 and 12, 12 through which pass the pivots 5 and 7 respectively, which are formed by the flanges of the channel members projecting beyond the webs thereof. These projections permit slight flexure under the pressure of the links 2, 2 when the nut 8 is tightened, thus transmitting the pressure to the clutch plates.

In the embodiment of the invention shown in the drawings, the clutch plates are thin steel stampings, each set comprising from 20 to 30 plates. The invention is also to be considered to include a modification wherein a lesser number of thicker plates constitute one set of plates, and each plate has a facing of friction material at the extremity where it interacts with the plates of another set. Alternatively friction material may be employed between some of the plates only.

By turning the pillar 1 about the pivot 5 and the links 2, 2 about the pivot 7, the back rest can be adjusted both horizontally or vertically in relation to the seat, and it can be locked in that position by one control, namely by tightening the nut 8.

The actual back rest and other structural details of the chair are conveniently those described in our prior specifications No. 326,835 or No. 378,878. In the modified construction shown in

Fig. 4, the link 2 on the same side of the mechanism as the hand-control is placed just inside the extensions 13 and 12 of the pillar 1 and the channel member 3 respectively, and the pivot 5 is formed as a bolt which carries the fly-nut 8. The pivot 7 is formed with an extension which carries trunnions 19; and a wide lever member 20 is provided, the ends of which are slotted to engage the pivots 5 and 7 and to abut against the nut 8 and the trunnions 19 respectively, whilst the central part of the lever is bowed to provide a fulcrum 21 which bears against the last-mentioned link 2, approximately at its centre. In this form the simultaneous engagement of the two clutches is also ensured by tightening the nut 8; in this case, however, the pressure is transmitted indirectly, through the lever member 20.

It is to be understood that the invention is not to be restricted to the exact details shown and described but embraces such modifications as come within the ambit of the following claims.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Back-rest adjusting mechanism for a chair of the type in which the back-rest is capable of simultaneous vertical and horizontal adjustment in relation to the seat, in which the back-rest is carried by a pillar which is pivoted near its end to a link, the other end of which is pivoted to a member fixed to the seat, and a multi-plate clutch is provided on the two pivots, these clutch plates being so interconnected that both pivots can be locked in adjusted position by the operation of a single clamping device.

2. Back-rest adjusting mechanism for a chair of the type in which the back-rest is capable of simultaneous vertical and horizontal adjustment in relation to the seat, provided with a multi-plate clutch device whereby the back-rest can be locked in any position by means of a single clamping member.

3. A back-rest adjusting mechanism as claimed in claim 2, in which an arm carrying the back-rest is pivoted near its base to the ends of two links, the other ends of which are pivoted to a member fixed in relation to the seat of the chair, and between which clutch plates are carried.

4. A back-rest adjusting mechanism as claimed in claim 1 comprising a set of clutch plates fixed in the base of the back-rest supporting pillar, a second set housed in the fixed member, and a third set carried between two links each pivoted

- to the back-rest and to a member fixed to the seat, the ends of the first and third sets cooperating to form a multi-plate clutch on the pivot in the back-rest pillar and the ends of the second and third sets cooperating to form a second multi-plate clutch on the pivot in the fixed member.
5. A back-rest adjusting mechanism as claimed in Claim 4, in which the two multi-plate clutches can be engaged or released by hand by means of a bolt passing through the links connecting the back rest pillar to the fixed member, and through the plates of the third set of clutch plates approximately at their centre, and fitted with a tightening nut or the like.
6. A back-rest adjusting mechanism as claimed in Claim 1 in which the means for locking the pivots in position comprises a wide lever through which pass the ends of the pivots, and which is provided with a bowed portion to form a fulcrum bearing upon the link near its centre, and a tightening device bearing upon said lever at one pivot, and a trunnion or equivalent device being carried at the other pivot substantially as described.
7. A back-rest adjusting mechanism according to any of the preceding claims in which friction material is introduced between plates constituting the clutch elements.
8. A back-rest adjusting mechanism for chairs substantially as described and illustrated in the accompanying drawings.
- Dated the 18th day of May, 1932.
- ANDREWS, BEAUMONT & BYRNE,
Agents for the Applicants,
201-6, Bank Chambers,
329, High Holborn, London, W.C.1.
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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd., 1933.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

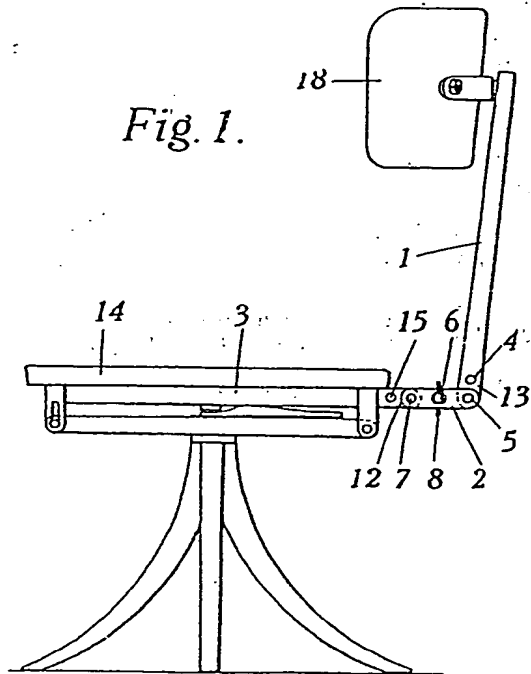


Fig. 3.

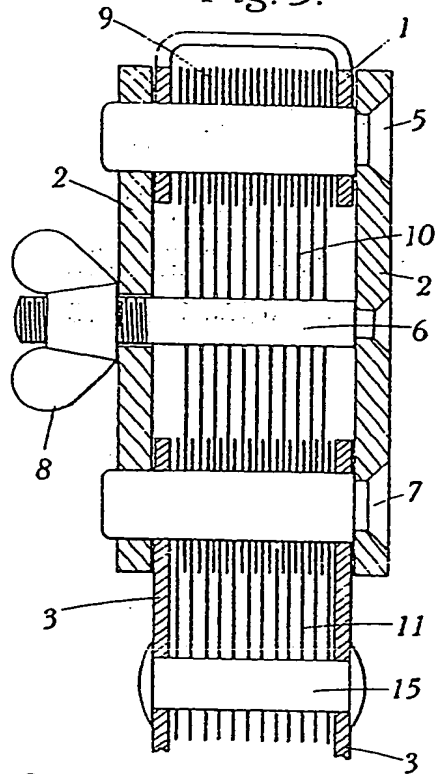
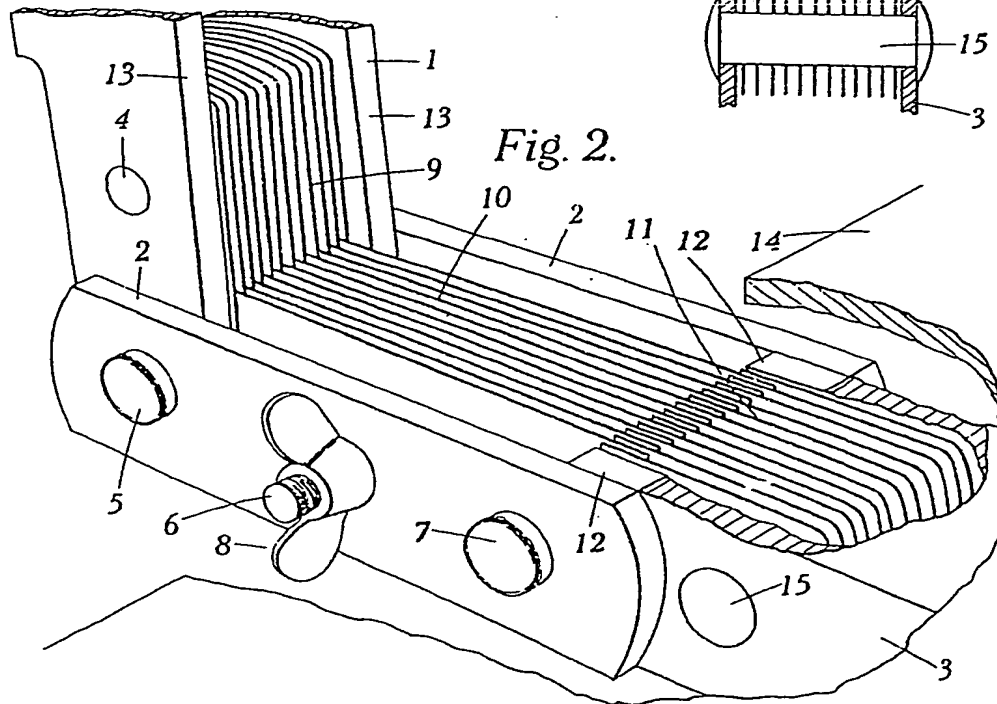
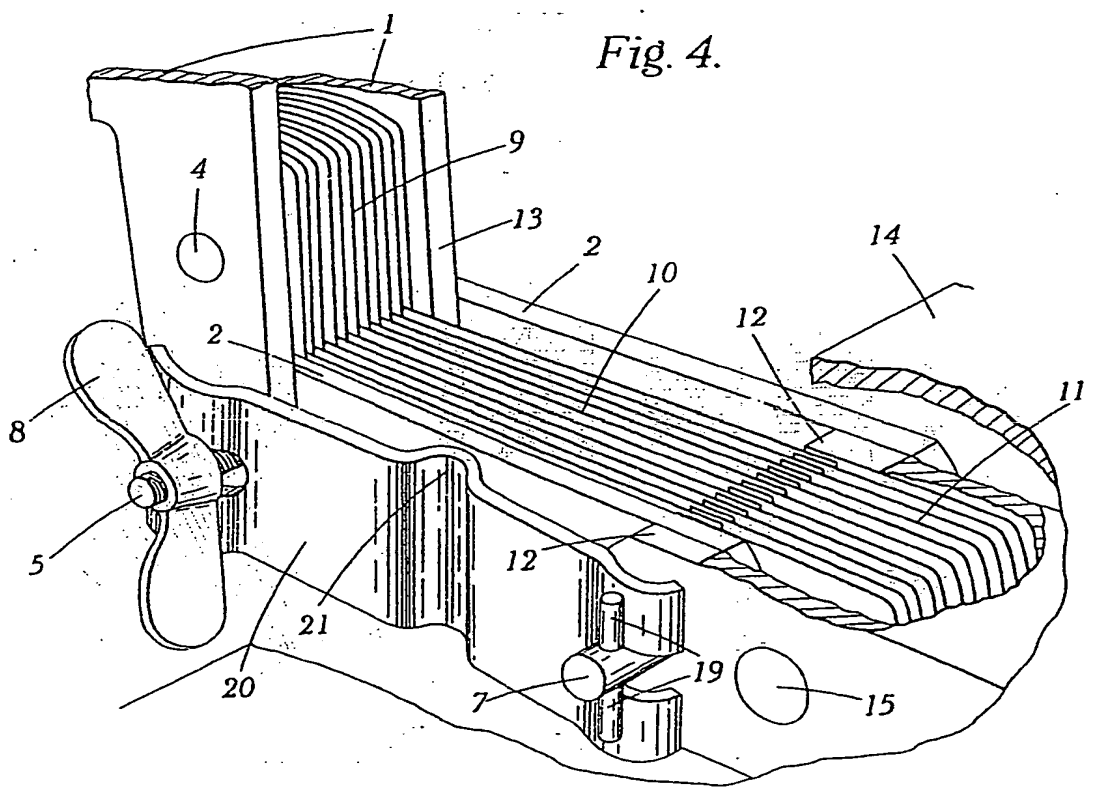


Fig. 2.



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Fig. 4.



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